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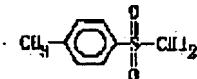
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(54) GERMICIDAL COMPOSITION AND SOAP CONTAINING THE
SAME

(57)Abstract:

PURPOSE: To obtain a germicidal
composition comprising diiodomethyl p-



tolyl sulfone in combination with 5-amino-1,3-bis(2-ethylhexyl)-5-methylhexahydropyrimidine and/or a chlorhexidines, and further to obtain a soap.

CONSTITUTION: This germicidal composition is obtained by combining diiodomethyl p-tolyl sulfone of formula I with 5-amino-1,3bis(2-ethylhexyl)-5- methylhexahydropyrimidine of formula II and/or a chlorhexidines of formula III (R is diacetate, digluconate or dihydrochloride) and dissolving the combined components in a solvent such as an alcohol. The composition is harmless to a human body and has a wide fungicidal spectrum. The soap capable of inhibiting the growth of microorganisms inducing various dermatoses by being parasitic on the skin and capable of killing the microorganisms is obtained by adding the composition to a soap. When the composition and the soap is used, the skin can be prevented from being infected by harmful microorganisms such as yeast and mold, and further the treatment of the already infected portion can be expected.

LEGAL STATUS

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JAPANESE [JP,07-101810,A]

CLAIMS DETAILED DESCRIPTION TECHNICAL FIELD PRIOR ART
EFFECT OF THE INVENTION TECHNICAL PROBLEM MEANS

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* NOTICES *

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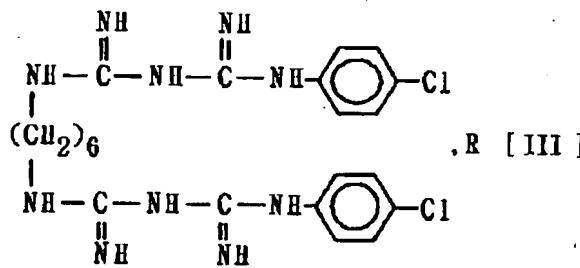
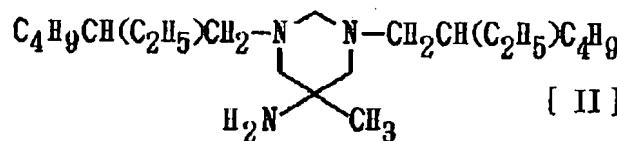
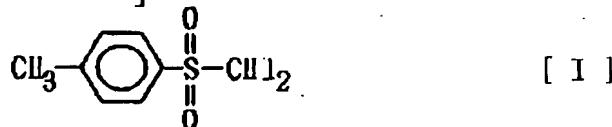
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CLAIMS

[Claim(s)]

[Claim 1] The following formula I, Formula II, and/or the following type III Sterilization constituent characterized by consisting of a compound and a solvent in which said compound is dissolved.

[Formula 1]



(R of said formula III is diacetate, *jig RUKONATO*, or dihydrochloride.)

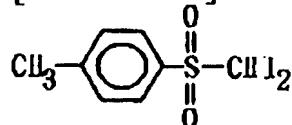
[Claim 2] The sterilization constituent according to claim 1 characterized by said solvent being alcohol.

[Claim 3] Said Formula I, Formula II, and Formula III The compound of the formula I among compounds: Formula II or formula III Sterilization constituent according to claim 1 with which the weight ratio of a compound is

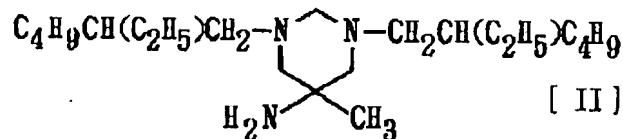
characterized by the compound [of 1:1 and Formula I] of the compound:type II of the compound:type III being 1:1:1.

[Claim 4] The following type I, Formula II, and/or the following type III Soap characterized by containing the constituent constituted with the compound.

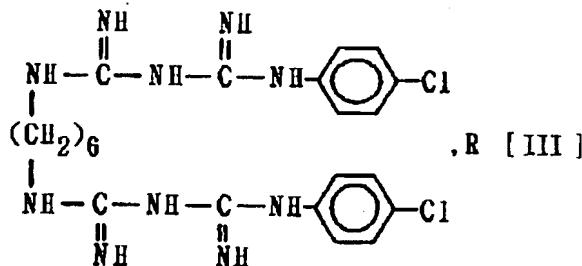
[Formula 2]



[1]



[II]



, R [III]

(R of said formula III is diacetate, jig RUKONATO, or dihydrochloride.)

[Claim 5] Soap according to claim 4 characterized by said constituent being directly added by beef tallow.

[Claim 6] Soap according to claim 4 characterized by dissolving in alcohol and said constituent being added by beef tallow.

[Claim 7] Soap according to claim 6 characterized by said alcohol being ethanol.

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DETAILED DESCRIPTION

[Detailed Description of the Invention]

[0001]

[Industrial Application] This invention relates to the soap which can control and sterilize growth of the sterilization constituent which has a fungicidal spectrum it is detailed and harmless to the body and wide range, and the microorganism which is parasitic on the skin and induces various skin disease by adding this with soap about the soap containing a sterilization constituent and this.

[Description of the Prior Art]

[0002] the organism which is not observed with the naked eye since the magnitude is too small, but grows and breeds itself under a proper nutrient, moisture, and temperature conditions with a microorganism -- saying -- a virus (Virus), bacteria (Bacteria), and yeast (Yeast) -- it molds (Fungi) and algae (Algae) etc. are named generically. Such a microorganism always exists on our the outskirts of a life. These take charge of main roles to the cyclical change of materials of an ecosystem, or are industrially used for an important process like physic or food processing. However, a certain microorganism invades into the body or other animals and plants, and the illness is caused or it becomes the cause of decomposing the wood of the life circumference, fiber, ingesta, etc. and reducing the quality of a living environment. In the skin of the body, it is 2 1cm. Hit 104 The microorganism of the stock unit (it is called cfu below colony forming unit;) of extent lives. These are called the Normal flora (normal flora), and it is harmless to the body and usually has the useful function to block that a harmful microorganism is rather infected with the skin. These numbers are uniformly maintained according to an operation of the transferrin (transferin) in an operation of microorganism destructive

enzyme, such as a lysozyme (lysozyme) in skin secrete, and skin secrete or the product of the microorganism itself. However, when the immunity function of the body becomes weak or a specific virulence microorganism carries out abnormality propagation by contact to a pollutant etc., disinfectant or a mold student disease will be got sick. Since the wood of the life circumference, fiber, paper, or ingesta offers an environment ideal for propagation of a microorganism, thereby, it is polluted in many cases. Furthermore, in the bad environment of propagation, a microorganism may survive until it is changed into a spore condition strong against thermal resistance and drought-resistant and changes to better growth conditions. Therefore, the body always has possibility of being infected by the microorganism through the polluted floor, wallpaper, clothes, a dishcloth, or ingesta. It is known if most infectivity diseases (5 - 10% [In the case of the U.S.] of a whole hospital patient) are spread through health engines, such as a hospital, (Hospital-acquired Infection). This is because mutual propagation is carried out among patients through the medical devotion member or the device which many patients are contacted etc., and the resistance over infection will fall by weakening of the immunity function by an operation or administration of a drug further, and, in the case of the patient of a condition, it will develop to a very serious condition. Therefore, although a disinfectant cleaning agent like an ointment gestalt or the South Korean patent official report No. 2935 [90 to] etc. was developed, the bactericidal substance of the gestalt which the wide range sterilization capacity over a microorganism can use easily [always] irrespective of a location doubtfully anywhere in the life circumference was not yet developed. While effectiveness was in the disinfection and the therapy of a part which prevented the contamination of the life circumference by the infectivity microorganism, and infection of the body, as a result were infected according to such a demand, even if it used it around a man and animals and plants, the safe sterilization constituent needed to be developed.

[Problem(s) to be Solved by the Invention]

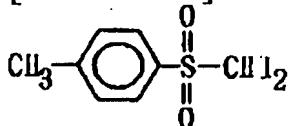
[0003] However, the difficulty which is in development of a bactericidal substance and is carried out for the time being is the problem of the versatility of a microorganism, and the safety to the body. According to the difference of the fine structure of the cell, bacteria are classified into a procaryote and yeast and mold are classified into eukaryote for a microorganism. Moreover, bacteria are divided roughly into a gram positive and a gram negative according to the structure difference of a cell wall. Generally a microorganism shows very various reactions to a bactericidal substance. Even if it is the

matter which has the sterilizing properties to a gram positive, to a gram negative, it is ineffective in many cases. Furthermore, even if it is an effective sterilization object, also when it does not have effective sterilizing properties to the yeast or mold which is eukaryote to two sorts of bacteria, it sees mostly. In order to solve such a trouble, this invention discovered the sterilization constituent which may annihilate whether growth of various microorganisms is controlled, and was completed based on this discovery. Therefore, the purpose of this invention is offering the sterilization constituent which mixed the bactericidal substance with which it has sterilizing properties to the microorganism of a different class, and the almost harmless thing's was known. Other purposes of this invention are offering the soap which uses said sterilization constituent as a raw material, and has excellent growth suppression and sterilizing properties to a microorganism.

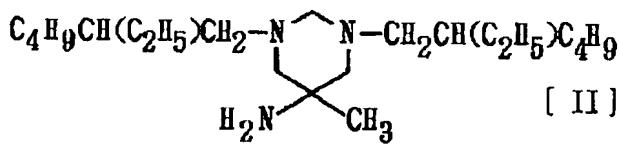
[Means for Solving the Problem]

[0004] The constituent of this invention for attaining said purpose is the following formula I, Formula II, and/or the following type III. It consists of a compound and a solvent in which said compound is dissolved.

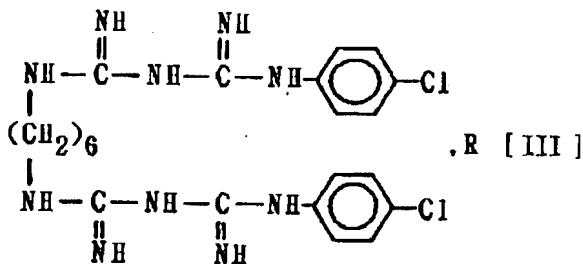
[Formula 3]



[I]



[II]

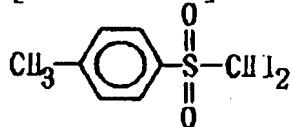


said formula III R -- diacetate (Diacetate), jig RUKONATO (digluconate), or dihydrochloride (dihydrochloride) it is.

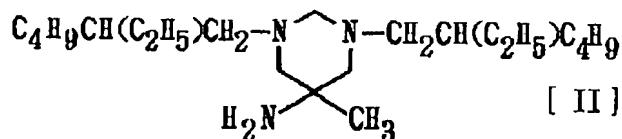
[0005] This invention is explained more concretely below an example. The sterilization constituent of this invention is the following type I, Formula II,

and the /following type III. It consists of a compound and a solvent in which said compound is dissolved.

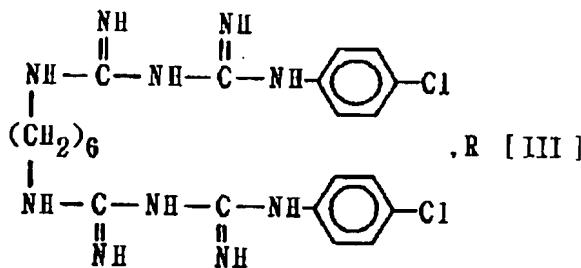
[Formula 4]



[I]



[II]



said formula III R -- diacetate (Diacetate), jig RUKONATO (digluconate), or dihydrochloride (dihydrochloride) it is . Although the diiodomethyl-Para-tolyl sulfone (diiodomethyl-p-tolyl sulfone) which is in this invention and is expressed as said formula I has excellent sterilizing properties to a gram positive, yeast, and mold, it is feeble. [of the bactericidal effect over a gram positive] In this invention As said formula II excellent in the bactericidal effect over a gram positive The 5-amino -1, the 3-bis(2-ethylhexyl)-5-methyl-hexahydro pyrimidine which are expressed [5-amino-1, 3-bis(2-ethylhexyl)-5-methyl-hexahydropyrimidine] [whether it adds and] Or while having a bactericidal effect ***** -- the chloro HEKISHIJIN [1 and 1'-hexamethylene-bis [5-(4-chlorophenyl) biguanide]] diacetate expressed -- Chloro HEKISHIJINJI gluconate or chloro HEKISHIJIN dihydrochloride is added, or it is said Formula II and Formula III. The compound which are expressed by carrying out can be added to coincidence. said formula I added here, Formula II, and formula III the weight ratio of a compound -- compound:type III of the compound:type II of Formula I, or Formula I a compound -- compound:type III of the compound:type II of 1:1 and Formula I

A compound is 1:1:1. In this invention, the sterilization constituent which has excellent sterilizing properties to a microorganism class will be manufactured by mixing, as mentioned above. The solvent used for the sterilization constituent of this invention has desirable alcohol.

[0006] The sterilization constituent of this invention For example, a *Bacillus subtilis* (*Bacillus subtilis*), *Escherichia coli* (*Escherichia coli*), *pneumonia* **** (*Klebsiella pneumonia*), *A coccus* (*Micrococcusmulticida*), an *Actinomyces* (*Mycobacterium tuberculosis*), Slime mould (*Proteus vulgaris*), a dysentery bacillus (*Shiegella dysenteria*), It is effective to a *staphylococcus* (*Staphylococcus aureus*), an *epidermis staphylococcus* (*Staphylococcus epidermis*), and bacteria like a *streptococcus* (*Streptococcus faecalis*). Moreover, growth of **** (*Aspergillus* sp.), an aerobe (*Aerobacidium pullulans*), *Candida* (*Candida* sp.), *epidermis mold* (*Epidermophyton* sp.), ***** (*Fusarium* sp.), *Microsporum* (*Microsporum* sp.), ***** (*Malassezia furfur*), **** (*Penicillium citrinum*), typical yeast like *Trichophyton* (*Trichophyton* sp.), or mold is checked.

[0007] The sterilization constituent of this invention can be added to various matter. For example, the sterilization constituent of this invention can be mixed to beef tallow so that it may mention later in order to manufacture sterilization soap. Moreover, in order to manufacture the effective antibacterial for surgery, it can add to a solvent like ethanol. Since the effectiveness of making growth of a microorganism controlling stands high, the sterilization constituent and sterilization soap of this invention can also be used for light cleaning of the hard part of the life circumference, disinfection, or sterilization wash of clothes as shown in vinyl, a wall, a floor, and a table. It was discovered according to the example of this invention that especially the sterilization constituent and sterilization soap of this invention have the sterilizing properties which stood high to the strong yeast and mold (*Antrophylic Fungi*) of invasiveness to the body like thrush *Candida* (*Candida albicans*) known as a cause bacillus of mold sex skin skin diseases, such as eczema, athlete's foot, a trichophytia, and an eczema marginatum, *Trichophyton* (*Trichophyton mentagrophytes*), and *epidermis mold* (*Epidermophyton floccosum*). Therefore, there is effectiveness also in prevention and the therapies of microorganism skin disease, such as eczema, athlete's foot, and a trichophytia.

[0008] Hereafter, although this invention is more concretely explained based on an example, this invention is not limited to the following example. Moreover, it specifies that the amount of components added in the following

example can be adjusted if needed.

Example 1: Put diiodomethyl-Para-tolyl sulfone 20g into manufacture place ** of a sterilization constituent, and ethanol of 99% of purity 1980ml, and make it dissolve in it. 5-amino -1 and 3-bis(2-ethylhexyl)-5-methyl-hexahydro pyrimidine 20ml and chloro HEKISHIJINJI gluconate 20g are supplied here, and between half a sums, it stirs violently and mixes. Three sorts of bactericidal substances are the ethanol solutions included 20,000 ppm at a time, respectively, and the sterilization constituent of this invention can change the concentration of three sorts of matter according to an application.

[0009] The growth suppression effectiveness over the various microorganisms of the sterilization constituent manufactured according to example 2 example 1 was measured. Here, the growth suppression effectiveness can be expressed as a value meaning the minimum concentration (it is called Media Interface Connector below Minimum Inhibitory Concentratrion;) of the sterilization constituent with which a microorganism cannot grow, after carrying out predetermined number inoculation of the microorganism at the suitable liquid medium which made the sterilization constituent of various concentration include and carrying out predetermined time culture at predetermined temperature. The presentation of the culture medium for growing up a microorganism is as having indicated to the following Table 1 and 2.

[Table 1]

表1 細菌成育培地

酵母エキス (Yeast Extract)	3 g
トリプトン (Trypton)	5 g
ブドウ糖 (Galucose)	1 g
蒸留水 (D. W)	1 リットル (pH 5.6)

[Table 2]

表2 菌の成育培地

麦芽エキス (Malt Extract)	40 g
ペプトン (peptone)	10 g
クロラムフェニコール (Chloramphenicol)	10 mg
蒸留水 (D. W)	1 リットル (pH 5.6)

* At the time of manufacture of plate agar, it is addition [0010] so that it may

become 1.5% about an agar. The component of a culture medium is used after sterilizing for 15 minutes at 121 degrees C by the conventional approach. The method of manufacturing the stock (stock) liquid of a microorganism is as follows. After carrying out the streaking (streaking) of bacteria and the yeast on plate agar like the conventional approach and cultivating them for two - three days at 30 degrees C, they scratch a single stock (2-3) by the loop formation (loop), and a NaCl solution (following, physiological sodium chloride solution) is made to suspend them 0.9%. After cultivating for five - seven days at 30 degrees C until a spore arises on plate agar, in the case of mold, 10ml of physiological-sodium-chloride-solution solutions which include Tween (tween) 80 5% is poured out on plate agar, it scratches them by the loop formation, and makes spore suspension. Thus, like the conventional approach, after the manufactured microorganism stock liquid measures the total bacterial count, it is inoculated into the liquid medium which includes various sterilization constituents. The amount of inoculation should maintain about 104 cfu/ml. A culture container is stirred at the rate of 150rpm at 30 degrees C after inoculation, bacteria are investigated 48 hours after, mold investigates growth extent 72 hours after, and Media Interface Connector is determined. The Media Interface Connector value of the sterilization constituent of an example 1 to each microorganism determined by said approach is as being shown in the following table 3.

[0011] The bactericidal effect over the various microorganisms of the sterilization constituent manufactured according to example 3 example 1 was measured. Here, a bactericidal effect can be expressed as a minimum concentration (MInimum Biocidal Concentration; henceforth MBC) value of the sterilization constituent with which the number of the microorganisms which survive will decrease to 0.1% or less of the number of microorganisms inoculated at first, after carrying out predetermined number inoculation of the microorganism at the suitable liquid medium which made the sterilization constituent of various concentration include and carrying out predetermined time culture at predetermined temperature. This value is determined by measuring the number of residual microorganisms which survives on the liquid medium to which growth of a microorganism did not take place by the conventional approach (Total Viable Cell Count), after experimenting according to an example 2. The MBC value of the sterilization constituent of an example 1 to each microorganism determined by said approach is as being shown in the following table 3.

[Table 3]

表3 本発明の殺菌組成物の種々の微生物に対するMIC及びMBC

微 生 物		MIC (ppm)	MBC (ppm)
細菌	枯草菌	50	50
	大腸菌	100	200
	放線菌	250	500
	ブドウ状球菌	200	300
	連鎖球菌	200	300
酵母	齧口瘡カンディダ	100	200
黴	麹菌	38	75
	表皮糸状菌	38	75
	白癬菌	38	75

[0012] Example 4: When the manufacture soap of sterilization soap is used, if it knows how many each components will be diluted, the constituent concentration which should be included by soap can be determined. European Patent ** which analyzed the effect the component included by soap affects the property of soap 0 363 215 (A2) The experiment approach used for the number was referred to. That is, when soap was generally used, it was assumed that the component of soap was diluted 100 times. In this invention, in order to manufacture the soap which has sterilizing properties to all the microorganisms that Table 3 was shown, it added and the concentration of a sterilization constituent was manufactured with soap, so that it might become at 25% or more. The presentation of the matter added per 100g of soap is as follows.

・牛脂 (Soap Base 又は Neat Soap)	97.5 g
・殺菌組成物	25.0 ml
・その他の添加剤	1.5 ml
香料	
色素	0.01 g

After it carries out milling (Milling) of the production process of sterilization soap for 5 minutes first and it grinds beef tallow completely, it adds a sterilization constituent and other additives, stirring. It is made to dry until ethanol evaporates completely and a moisture content becomes 5% or less. Again, milling is carried out for 15 minutes and an addition component is mixed completely. After carrying out pro DINGU (plodding) using Stephan BEKKUPURODA (Stephan Beck Plodder), maintaining 32-37 degrees C,

said mixture is injected in a ribbon gestalt. The injected mixture is stuck by pressure using MIDOGETTO multipress (Midget Multipress), and it manufactures with the soap of a suitable gestalt. After making a bactericidal substance mix by 0.5% of concentration to beef tallow, respectively at the time of manufacture of sterilization soap, without using the sterilization constituent of an ethanol solution condition, it can also manufacture by said approach.

[0013] The microorganism constituent inhibition effectiveness over the various microorganisms of the sterilization soap manufactured according to example 5 example 4 was measured. Here, the microorganism growth inhibition effectiveness of sterilization soap was expressed as (%) whenever [growth inhibition / to which the water solution of the soap which includes a sterilization constituent expresses relatively extent which checks growth extent of a microorganism compared with the water solution of the soap which does not include a sterilization constituent], and was measured as follows. After mixing 0.5ml of stock liquid of the various microorganisms which include an about 1000 cfu(s)/ml microorganism with 0.5ml (solution which 100ml of distilled water which had 2g of soap sterilized was made to suspend) of soap liquid 2%, it flows into plate agar and bacteria cultivate yeast and mold at 30 degrees C for 72 hours for 48 hours. Counting of the number of stocks of the microorganism which appeared on each plate agar is carried out, and the number of microorganism stocks which did not grow on the plate agar at the time of processing with the soap liquid which includes a sterilization constituent compared with the case where it processes with the soap liquid which does not include a sterilization constituent is expressed as (%) whenever [growth inhibition]. The result is indicated to the following table 4.

[Table 4]

表4 殺菌石鹼の微生物成長阻害効果

菌 株 ＼ 石鹼 の種類	葡萄状球菌		カンディダ		白癜菌	
	生存菌数 CFU	成長阻害 率 %	生存菌数 CFU	成長阻害 率 %	生存菌数 CFU	成長阻害 率 %
石鹼A	1 2 0 0	—	7 6 0	—	1 0 7 0	—
石鹼B	0	1 0 0	4	9 9	0	1 0 0

* For Soap A, the soap * soap B which includes only beef tallow is soap [0014] manufactured according to the example 4. The microorganism bactericidal effect over the various microorganisms of the sterilization soap manufactured according to example 6 example 4 was measured. Here, the microorganism bactericidal effect of sterilization soap could be expressed as a rate of sterilization (%) as which the water solution of the soap which includes a sterilization constituent expresses relatively extent which makes a microorganism sterilize compared with the water solution of the soap which does not include a sterilization constituent, and was measured as follows. After mixing 0.5ml of stock liquid of the various microorganisms which include an about 1000 cfu(s)/ml microorganism with 0.5ml (solution suspended in 100ml of distilled water which had 2g of soap sterilized) of soap liquid by the micro centrifuge tube (Microcentrifuge tube) 2%, it is left for 10 minutes at 30 degrees C, and is made for soap liquid and a microorganism to contact. After carrying out centrifugal separation (8000rpm, 5 minutes) and removing supernatant liquor carefully, the microorganism which precipitated is filled with 1ml of physiological salines, and soap liquid is washed well. After repeating the 2-third floor of this process and pouring out and suspending 1ml of physiological-sodium-chloride-solution liquid to the microorganism which precipitated, it flows into plate agar and bacteria cultivate yeast and mold at 30 degrees C for 72 hours for 48 hours. A microorganism bactericidal effect carries out counting of the number of stocks of the microorganism which appeared on each plate agar, and displays the number of microorganisms which decreased when it processed with the soap liquid which includes a sterilization constituent compared with the case where it processes with the soap liquid which does not include a sterilization constituent as a rate of sterilization (%) expressed relatively.

[Table 5]

表5 殺菌石鹼の微生物殺菌効果

菌 株 ＼ 石鹼 の種類	葡萄状球菌		カンディダ		白癬菌	
	生存菌数 CFU	成長阻害 率 %	生存菌数 CFU	成長阻害 率 %	生存菌数 CFU	成長阻害 率 %
石鹼A	700	—	825	—	730	—
石鹼B	7	99	8	99	204	72

* For Soap A, the soap * soap B which includes only beef tallow is soap [an effect of the invention] manufactured according to the example 4.

[0015] If the sterilization constituent and sterilization soap by this invention are used as explained above, skin infection can be prevented from harmful microorganisms, such as yeast and mold, and the curative effect of the already infected part can also be expected.

[Translation done.]